

First Record and Morphological Identification of The *Eulimnadia Michaeli* (Nayar and Nair, 1968) From Vernal Pools of Karachi, Pakistan

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ABSTRACT

Introduction: Crustaceans from class Branchiopod are common inhabitants of temporary water ponds throughout the world (Martin and Boyce, 2004). There are more than 70 species reported from Asia and Indonesia (Rogers *et al.*, 2013). According to modern standards, more than 747 spinicaudatan taxa are present, of which 215 are considered valid families, genera and species (Rogers, 2020). The class Branchiopoda is further categorized into three orders; Notostraca (tadpole shrimps), Anostraca (fairy shrimps) Cladocera (cladocerans) and suborders; Spinicaudata, Laevicaudata, and Cyclestherida (clam shrimps). Presently, there are three families of Spinicaudata; Family Limnadiidae, Family Leptestheriidae and Family Cyzicidae. *Eulimnadia michaeli* belongs to Family Limnadiidae (Rogers *et al.*, 2012; Reed *et al.*, 2015).

Objective: In the present study, presence of *Eulimnadia michaeli* is reported for the first time in Pakistan. *Eulimnadia michaeli* was identified on the basis of external morphology of egg and morphometric features.

Methods: After the post monsoon rainfall, several temporary water ponds were observed in the main campus of University of Karachi, Karachi, Sindh, Pakistan. A total of 30 specimens were collected, identified and kept under observation, which were later preserved in 70% ethanol. The specimens were observed under stereomicroscope at 0.63x magnification for morphometric measurements. Variables; length and height of carapace and body, were taken and regression was applied to observe their relationships.

Results: *Eulimnadia michaeli* (N=30) was found to have bivalved carapace that was oval in shape with transparent to pale yellow coloration. The carapace possessed 4-5 prominent growth lines. The head was rectangular and a pedunculate dorsal organ was prominent. 18 pairs of thracopods were observed which reduced in size posteriorly. The eggs of the specimen were also observed. The external surface was porous and had narrow ridges, forming 30-32 polygons of various sizes. Furthermore, the relationship between the length and height of the carapace and that of body was found to be negatively allometric.

Conclusion: *Eulimnadia michaeli* was found in the vernal pools after post monsoon rainfall. It was identified on the basis of morphological characters and the external morphology of eggs. The morphological features, however, may vary according to different localities, diet and environmental stress. Hence, the present study emphasis on further researches on freshwater ponds, especially the temporary ones which are capable of nursing rare brachiopods..

Keywords: Clam shrimp, Spinicaudata, Limnadiidae, *Eulimnadia michaeli*, Pakistan.

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